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(54) LABELING APPARATUS AND METHOD

(71) We, B & H MANUFACTURING COMPANY, INC., a Corporation organized and existing under the laws of the State of California, United States of America, of 1200, Scenic Drive, Modesto, California 95350, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to an apparatus and method.

More particularly, this invention relates to an apparatus and method for applying flexible indicia, such as labels, to containers.

Containers of many types require marking indicia to be applied to their exterior surface for identification purposes. Thus, by way of example consumer goods such as vegetables, soups, etc. are packaged in metal containers and a flexible wrapper is applied to the exterior surface of the container for identification of the commodity therein.

At present, the type of operation involved in application of labels to containers is relatively complicated and an expensive procedure. Normally, the labels for use in such an operation are pre-printed, cut and stacked in bundles of several hundred or more which are then supplied to the packaging manufacturer. The labels must be manufactured to precise tolerances, as any variation in their length and/or width will affect their "runnability" in a label application operation. One system for application of the labels to containers operates on the principle of applying a pattern of adhesive to the container, and running the container over the uppermost label of a stack of labels, whereby the container picks up the uppermost label and the latter is then wrapped around the container. The labels, stacked in a "magazine" of a labeling apparatus, must be carefully loaded into the magazine in order to perform properly. Thus, the labels must be "fanned" before being inserted into the magazine to ensure that they will separate individually to avoid the possibility of a container failing to pick-up a label. Nonetheless in practice this does happen and there is a resulting loss of labels and production time, resulting in increasing production costs.

A further problem associated with present labeling systems is that the grain of the substrate e.g. paper, is an important factor in applying the label to the container. Frequently the label manufacturers will provide labels where the grain of one batch runs in a direction opposite to the grain of a further batch. Depending on the grain of the substrate, problems are sometimes encountered in application of the label to a container due to curling of the label in the wrong direction.

Still further, in using systems involving stacked labels, some "downtime" is required to refill the label magazine, even when an automatic loading magazine is employed which is capable of receiving a further supply of labels when the first supply is being used.

All in all, the use of pre-cut labels is a relatively inefficient manner of applying such labels to containers, in addition to being costly. And, such systems employing this operate at relatively low speeds—compared to the production rate of the containers, so that normally an "in-line" operation is not possible without using two or more labelling machines.

According to a first aspect of the present invention there is provided a labelling apparatus for continuously applying to a succession of containers individual label lengths which have been separated from a continuous web of label material, such apparatus including a container transport drum rotatable about an axis for transporting a succession of containers from a loading station to a discharge station; a plurality of container retaining stations on said drum; releasable means at each retaining station for gripping a container for orbital movement about said drum axis and for clamping the container against rotation about its own axis with respect to the drum; means for severing the individual label lengths from a continuous web of labels; a rotatable vacuum drum located immediately adjacent said transport

drum for releasably holding a succession of the individual severed label lengths; means for continuously rotating said drums in opposite senses to cause facing peripheral surfaces of said drums to move in the same general direction, the vacuum drum being so positioned with respect to the container transport drum as to cause an end portion only of a label length held by the vacuum drum to contact a container on the container transport drum leaving a free unadhered portion; means for subsequently releasing the container at the discharge station with only the said end portion of the label length in contact therewith; and means for wrapping the previously unadhered portion of the label around the container.

According to a second aspect of the invention we provide a labelling apparatus comprising: separating means for separating a container from a supply thereof; container holding and transport means for receiving such an individual container from said separating means at a container loading station, gripping the container for non-rotation about its axis with respect to the transport means and continuously transporting that container in a general direction toward a container discharge station; label supplying means for supplying a continuous web of labels; advancing means for feeding such a continuous web of labels from said supplying means; cutting means located downstream of said advancing means for severing individual label lengths from the web of labels; label length holding and transport means for holding such individual label lengths during feeding thereof from said cutting means; and continuously transporting the label lengths in the said general direction to a label length applying station located along a path of transport of the container; and adhesive applying means for applying adhesive to the label length as the label length is transported from said cutting means to said label length applying station, and said label length holding and transport means being positioned to bring each label length into juxtaposition with an associated gripped container and to adhere an end portion only thereof thereto at the label length applying station; means for releasing the gripped container; and means for wrapping the previously unadhered portion of the label around the container.

According to a third aspect of the present invention, there is provided a container labelling method including the steps of: severing a label from a continuous web of labels, moving the severed label in one general direction with adhesive on a face thereof; clamping the container such that it is moved, simultaneously with the label, in the same general direction with a fixed point on the circumference of the container adjacent the label during its passage in the said general direction with the container facing the adhesive face of the label; effecting adherence of an end portion only of the label to the container while the container is held with the fixed point on its circumference adjacent the label and while the label and the container are both moved simultaneously thus to provide a freely extending unadhered portion of the label; releasing the container with only the said end portion of the label adhered thereto; and wrapping the previously unadhered portion of the label about the container.

In accordance with a fourth aspect of this invention, there is provided a method of continually applying and adhering labels from a continuous web of label material to a succession of containers, such method comprising: providing a first rotatable drum for releasably transporting a succession of labels; providing a second rotatable drum for releasably transporting a corresponding succession of containers; positioning the first and second drums with their peripheral surfaces facing each other; continuously rotating said drums about their axes in opposite senses to cause said facing surfaces to move in the same general direction; continuously moving said web towards said first drum; severing individual labels from said web at a location upstream of said first drum and applying such individual labels thereto with adhesive on the outer face of each label; holding each container on the second drum against rotation about its axis with respect to that drum; adhering an end portion only of each label to a container thus held on the second drum and releasing the label from the first drum thus providing a free unadhered portion of the label; releasing the container and partially adhered label from the second drum; and rolling the container and label to wrap the previously unadhered portion of the label about the container.

In a preferred embodiment, a container is separated from a supply, fixedly clamped against a rotation about its own axis and axial displacement with respect to the means transporting it, and orbitally moved about a different fixed axis. The step of supplying a continuous web of labels is preferably carried out by feeding a single layer or web of labels from a roll supply, whereafter an individual label length is severed from the supply and presented to the subsequent adhesive applying operation. To this end, the label is preferably fed through an applying station where adhesive is applied to the label in the desired pattern. The step of applying a label to a container is preferably carried out by placing the leading edge of the label onto the container and, after release of the container from the means moving it in the said general direction, rotating

the container about its own axis by rolling it along a relatively flat surface, thus wrapping the label about the container.

In order that the present invention may more readily be understood, the following description is given, merely by way of example, reference being made to the accompanying drawings in which:—

Fig. 1 is a side view of an apparatus according to the present invention;

Figure 2 is an end view taken along the right hand side of Figure 1;

Figure 3 is an end view of the label control drum; and

Figure 4 is a cross sectional view of the drum of Figure 3.

In the drawings, reference letter "L" denotes the labels and reference letter "C" denotes a container.

Referring now to Figures 1 and 2, the labeling apparatus according to the preferred form of the present invention is mounted on a frame designated by the reference letters Fr. In general, the frame members are all designated by reference letters Fr. Mounted to the frame member is a conventional container screw type feeding device driven by the main drive system hereinafter described. The screw feed includes a rotatable shaft 100 mounting at its free end a gear pinion 102 adapted to engage a further gear pinion 104 of the main drive shaft. Shaft 100 is mounted by means of bearing 106 connected to a mounting plate 108, and includes a standard clutch mechanism indicated generally by reference numeral 110.

A conventional screw feed mechanism SR is connected to the shaft 100, is journalled by bushings 112 and supports 114 to the frame Fr.

A source of containers e.g. cans, produced or supplied from a previous operation, are fed to an arrival station generally indicated by reference letter R, where they may be aligned in a single row by use of, for example, spaced apart guide rails 116. The cans may be fed to the arrival station R by suitable means e.g. a conveyor. Once at the arrival station, the cans are individually engaged by the screw feed and fed to the subsequent operation. The means for receiving a supply of containers, for feeding individual containers to the labeling operation, preferably consists of a vertically mounted rotatable drum indicated generally by reference letter D. In greater detail, drum D consists of a pair of spaced apart flanges 120 and 120*a* extending from a central shaft 122 which is journalled for rotation about the central axis. The shaft 122 is driven by suitable drive means as hereinafter explained.

The flange 120 is of stepped lip construction defined by an extending terminal portion 121 and a lower portion 123 forming therebetween an L-shaped container receiving edge, as shown in Figure 2.

The rotatable drum D includes a plurality of container retaining stations located thereabout, and defined in the embodiment shown by releasable clamping means adapted to retain a container by non-rotatably gripping at the station. To this end, the flange 120a includes a plurality of mounting brackets, only one of which is shown at 124, rigidly connected thereto, each bracket journalling a corresponding shaft 126. Mounted on each shaft 126 is a rotatable lever 128 having at one end a container engaging surface 130. Mounted to the other end of each lever 128 is a cam follower 132. Each lever 128 is spring loaded on its corresponding shaft 126 whereby it normally remains in a "closed" (container retaining) position.

Operating in conjunction with the container engaging means are cooperating means for opening the container engaging means at the container receiving station and the container discharge station, designated by S1 and S2 respectively (Figure 1). The container retaining means receives a container fed to the drum D, retains it in a container retaining station on the drum D through the labeling operation and discharges the container at a desired discharge station S2.

The cooperating members each comprise a stationary support 134 connected to the frame Fr, carrying a guide rail 136 thereon. The guide rail 136 (as shown in Figure 2) may be a curved plate, extending a distance indicated by the bracket portions S1 and S2 shown in Figure 1. Thus, during rotation of the drum D, the container gripping means, spring loaded and normally held in a closed position, will abut the guide rail 136 at the container receiving station S1, thereby opening the clamp to permit insertion of a container, whereafter the cam follower 132 disengages from the guide rail 136 and the container is retained in the retaining station of the drum until such time as it reaches the discharge station S2 whereafter the same operation is repeated.

Referring now to the label supply means and the means for feeding a supply of labels to a labeling station, a "V-shaped" supporting member mounts a pair of arms 200*a* and 200*b* which have shafts 202 extending therefrom. Each shaft 202 is adapted to mount a roll of labels, there being two shafts provided whereby a continuous uninterrupted labeling operation may be carried out without the necessity of halting operation of the apparatus to replace a single roll of labels.

The roll of labels, indicated by reference letter L, is shown as being journalled on the shaft 202; the roll of labels being placed between spaced apart triangular retaining members, having fingers 204 connected to a central portion 206 slidably journalled on the

shaft 202. The mounting screw 210, having projecting knobs 212, threadably engages threaded end portions of web control guide 228 to retain the roll of labels on shaft 202 through lever 222 and cam follower 226.

In accordance with a preferred feature of this invention, and for the purpose of maintaining exact alignment of the feed of the labels with the labeling system, there are provided means for permitting minor lateral adjustments of the roll L on the shaft 202. To this end, there is provided an adjusting means consisting of a threaded shaft 214 having at one end a spindle 216; the shaft 214 threadably engaging at the other end a threaded bushing 218 mounting it to the frame of the apparatus. Journalled on the threaded shaft 214 is a threaded sleeve 220, the latter pivotally engaging the lever 222 thereon. The lever 22 is centrally journalled on the shaft 224 for rotating movement thereon. The lever 222 is centrally journalled the sleeve 220 is provided with a cam follower 226, positioned to engage the web control guide 228, slidably journalled on shaft 202. Thus, by rotating the spindle 216, and by rotation of the lever 222, the web control guide can be moved axially on the shaft 202 to effect minor adjustments of the positioning of the roll L of labels, to bring it into alignment with the labeling operation as required and to retain the entire assembly on the shaft 202.

In this preferred embodiment the unwind system for the supply of labels includes a pair of spaced apart guide rollers 250 freely journalled on shafts 252 connected to a frame member of the apparatus. Downstream of the guide rollers 250, is a further pair of rollers 254—254¹. Roller 254 not driven, is journalled on a shaft 256. Roller 254¹, driven by the drive system, is journalled on shaft 256¹. Shaft 256¹ is mounted on a lever 402 which in turn is pivotally mounted on a shaft 404. Lever 402 is spring loaded by means of spring 260. Reference numeral 406 illustrates an adjustable rod connected to the lever 402 (slidably connected) at one end. At the other end, it is also connected pivotally to a lever 264. As the label web is pulled by drive roller 274, lever 264 will rise causing adjusting rod 406 to release the lever 402, which in turn, causes roller 254¹ to apply pressure to roller 254 causing the web to be driven and hence unwound from the supply thereof. The additional web material in turn will allow lever 264 to return to its former position and hence act on the lever 402 in reverse and cause roller 254¹ to relieve pressure on roller 254, thus decreasing supply of the label web.

The slack-takeup mechanism partially described above, includes a dancer roller assembly; the assembly including a freely mounted roller 408 journalled on a shaft 262 of the lever 264. The lever 264 is pivotally mounted on a shaft 266, whereby the weight of the roller 408 and lever 264 maintain a downwards pressure on the strip or web of labels as they pass about the roller 408.

After passing through the slack-takeup mechanism, and in accordance with a preferred feature of the present invention, the strip of labels may pass over a supporting surface 270 and through a registering device indicated generally by reference numeral 272. The purpose of device 272 is to "key-in" an individual label in the strip of labels to correspond to the length of the individual label to be cut from the strip. To this end, the device 272 may be an electric eye (photosensing device) which is well known in the art.

The drive means for feeding a strip of labels includes a driven roller 274 mounted on a rotatable shaft 276 operating in conjunction with an opposed roller 278 journalled on shaft 280. Shaft 276 mounting roller 274 is driven in a manner hereinafter described. The strip of labels thus passed between rollers 274 and 278, is pulled from the supply L thereof, and fed to the cutting and adhesive applying operations as hereinafter described.

A preferred cutting device, illustrated in the drawings, includes a single pair of cooperating cutting assemblies; the first comprising a rotatable drum 282 mounted on a shaft 284 with the drum 282 mounting a pair of cutting blades 286. The number of cutting blades may vary, depending on the diameter of the drum and the speed of rotation, etc. The shaft 284, rotating the drum 282, is driven by suitable means, in conjunction with the other components of the apparatus.

The second cooperating member of the cutting assembly is a stationary shear member 290 which may be suitably mounted on the apparatus to cooperatively sever a label length of material. However, according to a particular preferred embodiment and as illustrated in the drawings, the second cooperating member 290 is so constructed and arranged such that it does not directly contact the first knife member 286 when there is no label feed to the assembly. To this end, the shear member 290 is mounted on a lever 298, which in turn is pivotally mounted on pivot 300. One end of the lever 298, designated by reference numeral 302 is connected to a fixed stop arrangement 304 which in turn is mounted to the frame of the apparatus. The pivot 300 journals a clevis 306 connected to a pneumatic cylinder 308. If desired, an adjusting arrangement similar to that described with respect to the vacuum drum 314 may also be included so as to permit slight adjustments of the positioning of the shear member 290.

The piston assembly 308 is timed to actuate when no label feed is received between the cutting assembly. In this manner, the piston assembly will draw the stationary member slightly out of position so that the movable cutting blade 286 will not contact the stationary member, and thus prevent wear on the blades. Actuation of the piston assembly could be accomplished in several ways, for example, through a photosensing device, etc.

Located downstream of the cutting assembly in the feeding direction of the roll of label material is a positioning roller 310 freely journalled on a shaft 312 connected to the frame of the apparatus. This roller serves to position the label for a subsequent operation on a rotatable vacuum drum now to be described. The leading end of the label material is placed in juxtaposition with the drum by the guide roller 310 prior to it being severed by the co-operating cutting assembly.

The means for transfering a cut label from the cutting station to a label applying station where the label is applied to a container, according to the preferred embodiment shown in the drawings, includes a rotatable vacuum drum indicated generally by reference numeral 314. This vacuum drum includes a central rotatable shaft 316 journalled in the frame of the apparatus, the shaft being rotated by a central drive system hereinafter described, with bearing 318 mounting the shaft 316 against the frame. On the other side of the frame, bearing 318*a* journals the shaft.

The drum includes a circular member 320 and opposed flanges 320*b* and 320*a* defining a recess within the surface of the drum for receiving a label L. The drum 320 having a central aperture therein, is mounted on the shaft and positioned by means of a stop member 322. The label recess area between the flanges 320*a* and drum 320*b* is lined with an air permeable resilient material, such as rubber provided with air holes in it.

A source of vacuum (not shown) is connected, via outlet 324, to a pressure plate 380, which includes a plurality of apertures (air passages), one such passage being designated by reference numeral 414. The drum has a plurality of air conduits 416 disposed therein, whereby when the conduit 414 registers with a conduit 416, a vacuum will be created in the conduit 416. Extending to the outer surface of the drum are a plurality of further conduits 418 each connected to a conduit 416, which will thereby cause a vacuum on the surface of the drum.

To achieve the proper timed relationship between the registering of the pressure plate and the drum and hence the two conduits 414 and 416 and to align with the leading edge of the label, an adjustment bracket 417 is provided which is connected to the frame of the apparatus. This bracket mounts a rod 419 on which there is threaded a pin 428 which pin is rigidly connected to the pressure plate 380. By rotating adjustment rod 419, an angular movement of the pressure plate is effected to cause a change in the timed relationship between the pressure plate 380 and the drum 320.

The drum 320 is held on the shaft by means of the pressure plate 380 adapted to engage the outer flange 320a of the drum and frictionally engage therewith. Pressure plate 380 in turn is held in place by means of pressure flange 382, spring loaded by means of spring 384 and which in turn, is held on the shaft by means of a plate 386. Bolt 388 retains member 386 on the shaft.

The glue applying system of the present invention includes a glue bath in the form of an open topped container 390 containing a supply of adhesive. A rotatable glue wheel, indicated by reference numeral 392, is mounted on a shaft 394 journalled in the side walls of the container 390. The glue wheel 392 contains a desired pattern structure for applying glue to a label.

The glue container 390 is pivotally mounted at one end on a shaft 396. In the other end, it is spring loaded by means of spring 398 abutting a flange 400 of the container 390 to normally urge the glue wheel 392 against the label held by the vacuum drum 314. The magnetic control device indicated generally by reference number 402 is positioned adjacent the glue container 390 and is actuated by means of a solenoid operating in conjunction with the vacuum of the vacuum drum 314. This solenoid unit (not shown) will operate when there is a drop in the vacuum pressure of the drum 314, whereafter the magnetic control unit 402 will be actuated to pull the glue roller away from the vacuum drum 314. In this manner, when there is no label applied on the drum, the glue container will be lowered to prevent accidental application of the glue to the drum.

In the above described manner, the outer face of the label held by the vacuum on the drum 314 will be printed with glue. The glue is normally printed (and the glue apply wheel so constructed) to apply glue to the leading and trailing end portions of the label or as desired.

A label having the glue printed thereon, and retained by the vacuum drum 314, which is rotatable in one sense about its axis, is bodily moved about the axis of the vacuum drum to a station where the rotation of the drum D in the opposite sense to vacuum drum 314 brings a container into contact with the label, with the container moving in the same general direction as the label. At this point, the leading edge of the label hav-

ing the adhesive is secured to the container, the trailing edge of the label extending freely from the container as shown in Figure 1. Desirably a source of pressurised air may be connected to the vacuum drum and operated to aid detachment of the labels. The container, upon being orbitally rotated further towards the container discharge station, is then released from engagement with the gripping means otherwise retaining it; at which point the container and label are brought into contact with means for rolling the container about its axis and thus wrapping the label about the container. These last mentioned means include a pair of spaced apart rotatable wheels 422 mounted on rotatable shafts 424 (suitable means being provided for rotating one or both shafts). Extending about the wheels 422 is an endless belt 420, which said endless belt engages the container and rotates it about its horizontal axis upon a track support shown in Figure 1 to wrap the label thereabout.

The drive system, briefly summarized, includes a motor M, a gear box 430, a drive sprocket 432, connected to a driven sprocket 434 through chain 436. This in turn drives the main drive shaft 438 from which all moving components are centrally driven. Drive sprocket 434 may be mounted using any standard safety overload device.

Each of the movable parts are driven by suitable means connected to the main drive system such as belts and sprocket arrangements. Thus, as shown in Figure 2, the label feed drive roller 274 is driven through shaft 440 and clutch brake 442 by means of a variable speed pulley 444 which is controlled by lever mechanism 446 providing manual or automatic adjustment of the rate of feed of the labels for the purpose of aligning printed areas, where pre-printed labels are employed. In the case of automatic operation, the mechanism may be controlled through the photosensing device 272 as shown in Figure 1 and as previously described.

WHAT WE CLAIM IS:—

1. A labelling apparatus for continuously applying to a succession of containers individual label lengths which have been separated from a continuous web of label material, such apparatus including a container transport drum rotatable about an axis for transporting a succession of containers from a loading station to a discharge station; a plurality of container retaining stations on said drum; releasable means at each retaining station for gripping a container for orbital movement about said drum axis and for clamping the container against rotation about its own axis with respect to the drum; means for severing the individual label lengths from a continuous web of labels; a rotatable vacuum drum located immediately adjacent said transport drum for releasably holding a succession of the individual severed label lengths; means for continuously rotating said drums in opposite senses to cause facing peripheral surfaces of said drums to move in the same general direction, the vacuum drum being so positioned with respect to the container drum as to cause an end portion only of a label length held by the vacuum drum to contact a container on the container transport drum leaving a free unadhered portion; means for subsequently releasing the container at the discharge station with only the said end portion of the label length in contact therewith; and means for wrapping the previously unadhered portion of the label around the container.

2. Apparatus according to claim 1, and including separating means for separating individual containers from a supply thereof.

3. Apparatus according to claim 2 wherein the severing means includes a single pair of co-operating cutter assemblies positioned upstream of the vacuum drum, the apparatus further including control means cooperable with said cutter assemblies for placing the label web in juxtaposition to the vacuum drum before severing of an individual label length from the web.

4. Apparatus according to any one of claims 1 to 3, wherein means are provided to apply adhesive to the radially outer face of a label length while on the vacuum drum.

5. Apparatus according to any one of claims 1 to 4, wherein said label wrapping means include an endless conveyor for moving the container over a support track.

6. A labelling apparatus comprising: separating means for separating a container from a supply thereof; container holding and transport means for receiving such an individual container from said separating means at a container loading station, gripping the container for non-rotation about its axis with respect to the transport means, and continuously transporting that container in a general direction toward a container discharge station; label supplying means for supplying a continuous web of labels; advancing means for feeding such a continuous web of labels from said supplying means; cutting means located downstream of said advancing means for severing individual label lengths from the web of labels; label length holding and transport means for holding such individual label lengths during feeding thereof from said cutting means, and continuously transporting the label lengths in the said general direction to a label length applying station located along a path of transport of the container; and adhesive applying means for applying adhesive to the label length as the label length is transported

from said cutting means to said label length applying station and said label length holding and transport means being positioned to bring each label length into juxtaposition with an associated gripped container and to adhere an end portion only thereof thereto at the label length applying station; means for releasing the gripped container; and means for wrapping the previously unadhered portion of the label around the container.

7. Apparatus according to claim 6, wherein the said end portion of the label length is the leading edge portion.

8. Apparatus according to claim 6 or 7, wherein said container holding and transport means comprises a member rotatable about a fixed axis; means for rotating said rotatable member; at least one container gripping means associated with said rotatable member for releasably gripping a container separated from the supply thereof, and for discharging that container at said container discharge station.

9. Apparatus according to claim 8, wherein there are a plurality of said container gripping means mounted in a spaced apart relationship, and each container gripping means is adapted releasably to engage a single container.

10. Apparatus according to claim 8 or 9, wherein said label length holding and transport means acts to transport a cut label length into juxtaposition with said rotatable member; and further including means to release such a cut label length from said label length holding and transport means at said label length applying station.

11. Apparatus according to any one of claims 6 to 10, wherein said container separating means includes a spiral screw feed, said screw feed being adapted to feed individual containers to said container holding and transport means.

12. Apparatus according to any one of claims 6 to 11, wherein said means for supplying a continuous web of labels includes support means for mounting a roll of labels, and said label web advancing means includes a slack take-up means.

13. Apparatus according to claim 12, wherein said label web advancing means include intermittently operable drive means adapted to advance the continuous label web in conjunction with said slack take-up means, such that the label web passes through said slack take-up means prior to being fed to said cutting means.

14. Apparatus according to claim 12 or 13, wherein said slack take-up means include a dancer roller assembly.

15. Apparatus according to claim 13 and claim 14, wherein the dancer roller assembly is adapted to move between a first and a second position, and is connected with said intermittently operable drive means in such manner that when in said first position said intermittently operable drive means advances said label web, and when in said second position said intermittently operable drive means does not advance said web.

16. Apparatus according to any one of claims 6 to 15, wherein said label length holding and transport means includes a vacuum drum mounted for rotation about a fixed axis and a source of vacuum connected to said drum.

17. Apparatus according to claim 16, and further including a source of pressurized air in operative relationship to said vacuum drum, and adapted to aid in detaching a label length from being held by said drum to apply it to a container.

18. Apparatus according to any one of claims 6 to 17, wherein said cutting means comprises a pair of spaced apart co-operable cutting members, one of said co-operable members being a rotatable member rotatable about a fixed axis.

19. Apparatus according to claim 18, wherein the other of said cutting members is a normally stationary member mounted with respect to said one member whereby both said members abut only during severing of a label length from a continuous web.

20. A labelling apparatus substantially as hereinbefore described with reference to and as shown by the accompanying drawings.

21. A container labelling method including the steps of: severing a label from a continuous web of labels, moving the severed label in one general direction with adhesive on a face thereof; clamping the container such that it is moved, simultaneously with the label, in the same general direction with a fixed point on the circumference of the container adjacent the label during its passage in the said general direction with the container facing the adhesive face of the label; effecting adherence of an end portion only of the label to the container while the container is held with the fixed point on its circumference adjacent the label and while the label and the container are both moved simultaneously thus to provide a freely extending unadhered portion of the label; releasing the container with only the said end portion of the label adhered thereto; and wrapping the previously unadhered portion of the label about the container.

22. A method according to claim 21 wherein an endless conveyor is provided to roll the container on a support for wrapping the label about the container after its release.

23. A method of continually applying and adhering labels from a continuous web of label material to a succession of containers, such method comprising: providing a first rotatable drum for releasably trans-

porting a succession of labels; providing a second rotatable drum for releasably transporting a corresponding succession of containers; positioning the first and second drums with their peripheral surfaces facing each other; continuously rotating said drums about their axes in opposite senses to cause said facing surfaces to move in the same general direction; continuously moving said web towards said first drum; severing individual labels from said web at a location upstream of said first drum and applying such individual labels thereto with adhesive on the outer face of each label; holding each container on the second drum against rotation about its axis with respect to that drum; adhering an end portion only of each label to a container thus held on the second drum and releasing the label from the first drum thus providing a free unadhered portion of the label; releasing the container and partially adhered label from the second drum; and rolling the container and label to wrap the previously unadhered portion of the label about the container.

24. A method according to claim 23, wherein each label is engaged with said first drum before it is severed from said web.

25. A method according to claim 23 or 24, wherein a continuous web of labels is fed from a roll supply.

26. A method of labelling containers substantially as hereinbefore described with reference to the accompanying drawings.

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1342680 COMPLETE SPECIFICATION
3 SHEETS *This drawing is a reproduction of the Original on a reduced scale*
Sheet 1

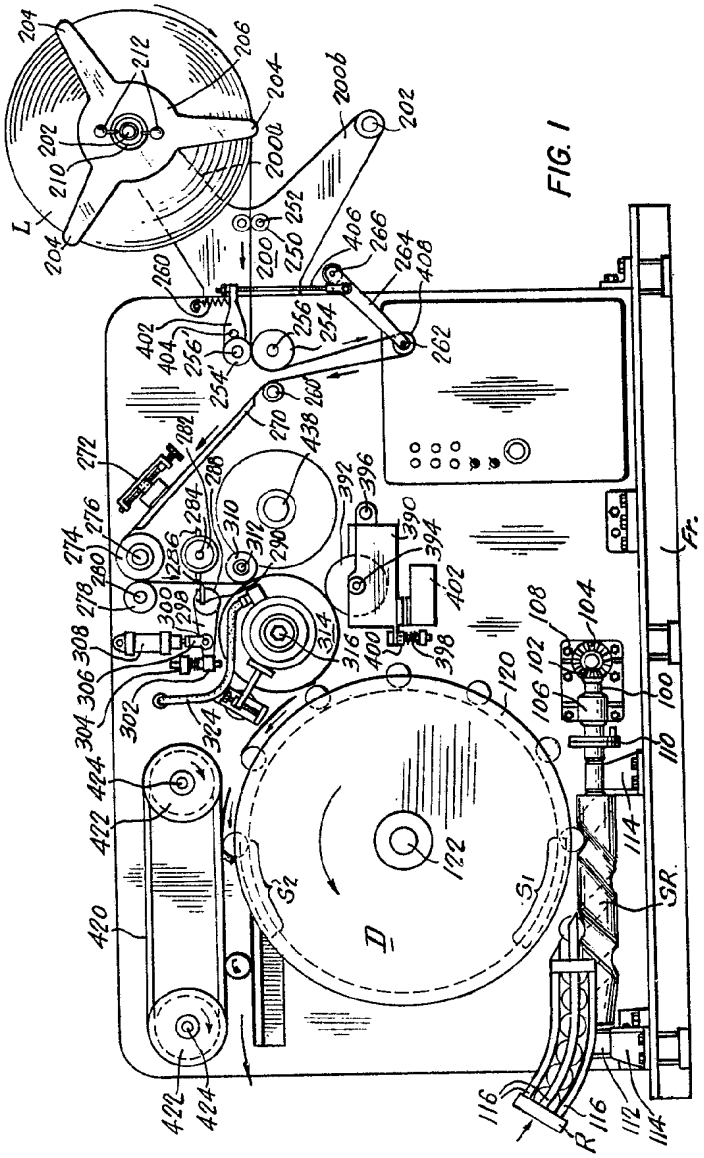

FIG. 1

1342680 COMPLETE SPECIFICATION
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Sheet 2

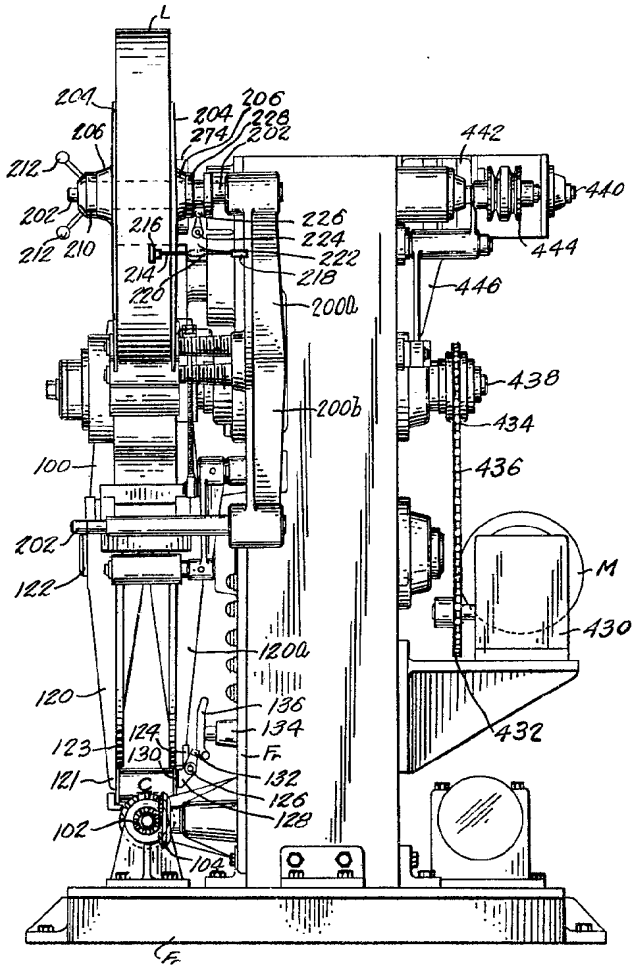

FIG. 2

1342680 COMPLETE SPECIFICATION
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Sheet 3

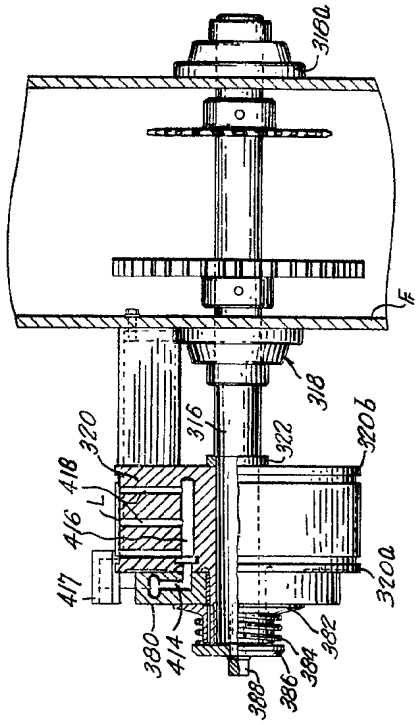

FIG. 4

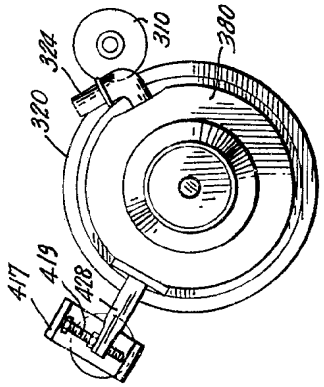

FIG. 3